WHAT IS CLAIMED IS:

1. A method of cleaning a polishing pad surface subsequent to chemical-mechanical polishing (CMP) a wafer surface containing copper (Cu) or a Cu-based alloy, the method comprising applying to the polishing pad surface a cleaning composition comprising:

about 0.1 to about 3.0 wt.% of at least one organic compound containing one or more amine or amide groups;

an acid or a base in an amount such that the composition has a pH of about 5.0 to about 12.0; and

water.

2. The method according to claim 1, wherein the composition is a solution comprising;

ethylenediamine;

an acid selected from the group consisting of phosphoric acid, acetic acid and sulfuric acid, or a base selected from the group consisting of potassium hydroxide, sodium hydroxide and ammonium hydroxide; and

the remainder deionized water.

3. The method according to claim 1, wherein the composition is a solution consisting essentially of the organic compound, the acid or base and deionized water.

4. The method according to claim 1, wherein the composition is a solution having a pH of about 5.0 to about 12.0.

5. The method according to claim 1, wherein:

the organic compound forms at least one complex with Cu and/or Cu-containing by-products generated during CMP; and

the at least one complex is (are) dissolved in the deionized water.

6. The method according to claim 4, comprising applying the solution to a rotating polishing pad at a flow rate of about 100 to about 600 ml/min.

7. The method according to claim 6, comprising applying the solution to the polishing pad for about 3 seconds to about 20 seconds after conducting CMP on each of a plurality of wafers having a surface comprising Cu or Cu alloy.

8. The method according to claim 1, further comprising rinsing the polishing pad surface with water to remove any cleaning solution from the polishing pad surface, after applying the solution and prior to conducting CMP on a subsequent wafer.

9. The method according to claim 8, comprising rinsing by applying pressurized water to the polishing pad surface for about 2 seconds to about 20 seconds.

10. The method according to claim 1, further comprising removing any substrates from the wafer surface before applying the cleaning composition to the polishing pad surface.

11. The method according to claim 1, comprising conditioning the polishing pad surface at least one of before, during and after applying the cleaning solution.

12. A method comprising the sequential steps:

(a) conducting chemical-mechanical polishing (CMP) on a first wafer surface containing copper (Cu) or a Cu-based alloy on a surface of a polishing pad;

(b) removing the wafer from the pad;

(c) applying to the polishing pad surface a cleaning composition comprising:

about 0.1 to about 3.0 wt.% of at least one organic compound containing one or more amine or amide groups;

an acid or a base in an amount such that the composition has a pH of about 5.0 to about 12.0; and

water;

(d) rinsing the polishing pad surface with water to remove any cleaning composition on the polishing surface;

(e) conducting CMP on a second wafer; and

(f) repeating steps (b) through (e).

13. The method according to claim 12, wherein the composition is a solution comprising:

ethylenediamine;

an acid selected from the group consisting of phosphoric acid, acetic acid and sulfuric acid, or a base selected from the group consisting of potassium hydroxide, sodium hydroxide and ammonium hydroxide; and

the remainder deionized water.

14. The method according to claim 12, wherein the composition is a solution consisting essentially of the organic compound, the acid or base and deionized water.

15. The method according to claim 12, wherein the composition is a solution having a pH of about 5.0 to about 12.0.

16. The method according to claim 12, wherein;

Cu and/or Cu containing by-products are generated during CMP on the surface of the polishing pad;

the at least one organic compound forms at least one complex with the Cu and/or Cu-containing by-products;

the at least one complex is (are) dissolved in the water; and

the cleaning composition containing the dissolved complexes are removed during rinsing.

17. The method according to claim 15, comprising applying the solution to a rotating polishing pad at a flow rate of about 100 to about 600 ml/min.

18. The method according to claim 17, comprising applying the composition to the rotating polishing pad for about 3 seconds to about 20 seconds.

19. An apparatus for conducting chemical-mechanical polishing (CMP) on a wafer surface containing copper (Cu) or a Cu alloy, the apparatus comprising;

a platen;

a polishing pad or sheet mounted on the platen;

a first dispenser adapted to dispense a cleaning composition on a working surface on the polishing pad or sheet; and

a source of the cleaning composition coupled to the first dispenser, the cleaning composition comprising;

about 0.1 to about 3.0 wt.% of at least one organic compound containing one or more amine or amide groups;

an acid or a base in an amount in such that the cleaning composition has a pH of about 5.0 to about 12.0; and

the remainder water.

20. The apparatus according to claim 19, further comprising:

a second dispenser adapted to a dispense water on a working surface of the polishing pad; and

a source of water coupled to the second dispenser.

21. The apparatus according to claim 20, wherein the second dispenser is adapted to dispense water under pressure.

22. The apparatus according to claim 20, further comprising a controller having a program for:

dispensing the cleaning composition on the polishing pad after conducting CMP on the wafer surface; and

dispensing the water from the second dispenser on the wafer surface, after applying the cleaning composition and before conducting CMP on another wafer.

23. The apparatus according to claim 21, further comprising a pad conditioner adapted to condition the polishing pad, wherein the controller is further programmed for conditioning the polishing pad with the pad conditioner at least one of before, during and after applying the cleaning composition.

24. The apparatus according to claim 19, wherein the composition is a solution having a pH of about 5.0 to about 12.0 and comprises:

ethylenediamine;

an acid selected from the group consisting of phosphoric acid, acetic acid and sulfuric acid, or a base selected from the group consisting of potassium hydroxide, sodium hydroxide and ammonium hydroxide; and

the remainder water.

25. The apparatus according to claim 22, wherein the computer is programmed to:

apply the cleaning composition to a rotating polishing pad at a flow rate of about 100 to about 600 ml/min. for about 3 seconds to about 20 seconds after conducting CMP on each of a plurality of wafers; and

rinsing by applying pressurized water to the polishing pad surface for about 2 seconds to about 20 seconds.

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